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By Electronic Filing

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: In the Matter of Improving Public Safety Communications in the 800 MHz Band
WT Docket No. 02-55
Ex Parte Presentation

Dear Ms. Dortch:

Lucent Technologies (Lucent), a global developer and manufacturer of wireless network equipment, has followed the discussion in the Commission's Docket 02-55 – "Improving Public Safety Communications in the 800 MHz Band." Although Lucent did not previously file in the Commission's formal comment and reply cycles in this proceeding, Lucent is keenly interested in the allocation of Commercial Mobile Radio Service (CMRS) spectrum in the U.S. and wishes to add the following input to the record. Lucent's comments are limited to technical considerations concerning interference mitigation and do not address any cost issues associated with this matter.

Causes of CMRS-Public Safety Interference

Lucent concurs with the several commenters who suggest that an inherent cause of interference into 800 MHz public safety systems is the disparate system designs used by public safety networks and CMRS systems, including Specialized Mobile Radio (SMR), and the close spectral proximity in which public safety and CMRS/SMR systems operate. As explained in many of the filed comments, public safety operates noise limited systems which use a high site design with one or few cell sites. CMRS/SMR operates interference limited systems based upon low site designs with a cellular architecture. The possibility that a public safety receiver must operate in a weak public safety signal area, while in the shadow of a CMRS base station and its associated strong signal, provides the scenario for interference into public safety systems.

Lucent further agrees that this scenario is likely to negatively impact the receipt of the desired public safety signal through the presence of intermodulation (“IM”) products generated within the public safety receiver. Multiple carrier frequencies from CMRS/SMR transmitters, spectrally close to public safety systems, can mix to generate interfering signals (IM products) that are within the victim system’s band and, therefore, unable to be attenuated through the use of filters.

Realignment of the Two Disparate Technologies is the Best Method to Resolve CMRS-Public Safety Interference

Rebanding that would allocate a contiguous block of spectrum for public safety systems, either within the 800 MHz band or outside the band (e.g., 700 MHz), will significantly mitigate interference from cellularized operations into non-cellular public safety systems. The Consensus Plan, for example, which would allocate the 806-816/851-861 MHz band to public safety and private wireless, and the 816-824/861-869 MHz band to cellularized SMR, will consolidate SMR base station transmit operations above 861 MHz and relocate public safety mobile receive bands below 861 MHz. This spectral separation, together with the proposed 2x2 MHz guard band between public safety and SMR, will dramatically reduce IM products in the public safety bands below 861 MHz.

In addition, to the extent that out-of-band emissions (OOBE) may be another source of interference into public safety systems, a realignment that provides spectral separation between CMRS/SMR and public safety systems will enable the effective and practical filtering of CMRS/SMR base station transmissions not possible under the current interleaved band plan. Thus, realignment of the 800 MHz band should significantly resolve the CMRS/SMR-public safety interference problem.

Moreover, the realignment of this band is consistent with the recommendations of the Commission’s Spectrum Policy Task Force (SPTF), which recognized, in its report, that a common element that the Commission should incorporate into its spectrum policy is the grouping of technically compatible systems in close spectral proximity. An obvious corollary to this recommendation is that disparate systems (such as high site noise limited systems and low site interference limited cellular systems) should be spectrally separated.

Finally, a significant advantage of 800 MHz realignment is that it imposes a nationwide solution, which would provide relief from potential interference at all impacted locations, and minimize the need for reactive, site-by-site mitigation procedures

Motorola’s Proposed Technical Solutions Are a Supplement to Realignment, Not a Substitute

Lucent recognizes the efforts of Motorola, which describe, in a recent *ex parte* correspondence, the development of improvements to public safety receivers that will help mitigate potential interference. Lucent suggests, however, that the future availability of such improvements (switchable attenuators, tunable filters) should not preclude and cannot substitute for the

realignment of the 800 MHz band. As previously noted, there can be no doubt that the current 800 MHz allocations for public safety, B/ILT, and SMR are flawed, and that realignment to eliminate the interleaved assignments and to spectrally separate public safety from CMRS/SMR systems that employ cellular architectures would significantly mitigate the potential for public safety interference. Indeed, Motorola, in its correspondence, notes that

“...Nextel, working with associations that represent public safety and private radio interests, has developed a plan (“consensus plan”) which would significantly reduce the interference in the 800 MHz band by consolidating public safety use and eliminating the interleaving of CMRS channels with public safety.”¹

Realignment should make it possible for public safety handset manufacturers to design receiver front ends that are simpler and more effective, and offer greater resistance to the effects of interference. The additional improvements in public safety receiver technology described by Motorola – if implemented and used together *with rebanding* – should provide further protection.

Conclusion

In summary, Lucent believes that the Commission should consider realignment of the 800 MHz band as the primary remedy to the problem of interference into public safety systems, regardless of any potential improvements in public safety receivers that promise to reduce the impact of interference. Lucent’s conclusion is based on technical considerations concerning interference mitigation and does not address any cost issue associated with this matter.

Comments filed in this proceeding suggest the relocation of existing 800 MHz public safety spectrum to contiguous frequencies in either the 800 MHz or 700 MHz bands. As the Commission is well aware, the 700 MHz band is encumbered with UHF-TV channels and its availability in the near term (i.e., prior to 2006 or beyond) is problematic.

It would appear therefore that the mitigation of 800 MHz interference into public safety systems could be realized sooner if public safety systems are relocated within the 800 MHz band, consistent with the Consensus Plan.

Sincerely,

/s/Robert A. Geilich

Robert A. Geilich
Corporate Counsel

cc: Edmond Thomas, Chief, Office of Engineering & Technology

¹ Motorola, at 2, May 6, 2003.